EMERGENCY SERVICES DIVISION Fire-Rescue Group Operating Procedure BROOKHAVEN NATIONAL LABORATORY	**Procedure No.:** FR-HAZ-10.0.1 **Revision:** 0 **Effective:** September 1, 2005 **Page:** 1 of 4
Subject: Response to Radiological Incidents	

1.0 Purpose

1.1 The purpose of this procedure is to provide instructions to the Fire-Rescue Incident Commander (IC) and the Fire-Rescue Group members for response to hazardous materials incidents deemed to be radiological incidents or involving radiological materials.

2.0 Responsibilities

2.1 The IC is responsible to ensure the initial emergency response radiological actions are followed until technical expertise, such as RadCon First Responders, arrive on scene to provide specialized guidance.

2.2 The Duty Fire Officers are responsible to the Fire Chief to ensure that their staff is trained in the content of this procedure and for ensuring that it is carried out.

2.3 Fire Rescue Personnel are responsible for ensuring that they implement this Operating Procedure (OP).

3.0 Policy

N/A

4.0 References

4.1 10 CFR 835 – Occupational Radiation Protection

4.2 BNL Radiological Control Manual Chapter 2 Appendix 2A Guidelines for Control of Exposures during emergencies

5.0 Definitions

5.1 **CFR –** Code of Federal Regulations

5.2 **Cold Zone:** The cold zone, or the support zone (SZ), is the area outside the warm zone where there is no contamination present. The cold zone is the area where the CP and support functions that are necessary to control the incident are located.

5.3 **Emergency Exposure:** Exposure to radiation received in an emergency situation.

5.4 **Hot Zone:** The hot zone is an area immediately surrounding an incident, which extends far enough to prevent adverse effects from the device/agent to personnel outside the zone. The hot zone can also be referred to as the exclusion zone (EZ), real zone, or restricted zone and is the primary area of contamination.

5.5 **Incident Commander (IC):** The fire or police officer who is in charge of the scene at an emergency. The IC may also be another person as the nature and urgency of the emergency changes.

5.6 **Occupational Dose:** An individual's ionizing radiation dose (external plus internal) as a result of that individual's work assignment. Occupational dose does not include doses received as a medical patient or doses resulting from background radiation or participation as a subject in medical research programs.

5.7 **Warm Zone:** The warm zone (also known as either the decontamination zone or the contamination-reduction zone) is an area immediately surrounding the hot zone, which could become contaminated due to ongoing operations.

6.0 Procedure

Note: Radworker training and additional training on the risks and effects of acute exposures > 5 rem are prerequisites to use of this procedure.

6.1 Determine whether or not radiological materials or a radiological/nuclear facility are involved in the incident using standard methods.

6.1.1 Standard methods include:

- Run Cards
- Placards
- Metering
- Visual Observation
- Direct information from personnel

6.2 If radiological materials are involved in the incident, establish the hot zone at 2 mr/hr or less.

6.2.1 Incident location configuration may determine the hot zone.

6.3 Establish the warm zone-cold zone boundary at background readings. Ensure all personnel are upwind and uphill, if applicable.

6.3.1 Incident location configuration may determine the warm and cold zone.

6.4 Consider shutdown of building systems, if applicable.

6.5 Notify RadCon First Responders. Ensure the DOE-RAP Team has been notified by the IC if off-site and they are not already on scene.

6.6 If emergency entry must be made, use the following guidelines:

6.6.1 The Incident Commander shall determine when emergency entry shall be made.

6.6.2 Minimize the number of personnel used in rescue operations.

6.6.3 The Incident Commander shall weigh actual and potential risks against the benefits to be gained. Minimize the risk of injury to those involved.

6.6.4 No personnel shall be required to perform a rescue action that might involve substantial personal injury or risk.

6.6.5 All effort shall be made to limit total dose to less than 5 rem per person.

6.6.6 Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided in Attachment 1 shall have current Rad Worker training and be briefed beforehand on the known or anticipated hazards to which the individual will be subjected.

6.6.7 The Incident Commander shall determine when the emergency is over and recovery and reentry begins. If the Emergency Operations Center is operational, the Crisis Manager in conjunction with the IC will make the determinations.

6.7 Contamination

6.7.1 Minimize the number of personnel used in rescue operations.

6.7.2 Establish a contamination corridor by using an appropriate warm zone.

6.7.3 Use good contamination control practices. Several are listed below.

6.7.3.1 Practice ALARA principles.

6.7.3.2 Double glove as necessary.

6.7.3.3 If you suspect contamination, remain in a safe area to avoid spreading it.

6.7.3.4 Use your training.

6.8 Recovery and Re-entry

6.8.1 Any dose that may exceed 5 rem in recovery and re-entry operations must have approval from BNL Senior Management in accordance with BNL procedures.

6.8.2 Work planning processes shall apply in recovery and reentry operations.

6.9 Post-Incident Notification

6.9.1 The Radiological Controls Division shall be notified post incident to assist in appropriate monitoring and reporting requirements in accordance with their procedures.

7.0 Attachments

7.1 Emergency Exposure Limits

ATTACHMENT 1

DOSE LIMITS FOR EMERGENCY EXPOSURE

Dose Limit (REM), Total Effective Dose Equivalent	Activity	Condition
5	All	
10	Protecting Valuable Property	Voluntary Basis, where a lower dose not practicable
25	Life saving or protection of large populations	Voluntary Basis, where a lower dose not practicable
>25	Life saving or protection of large populations	Voluntary Basis, where a lower dose not practicable

Extracted from 10CFR835.1302 - Emergency exposure situations.

(a) The risk of injury to those individuals involved in rescue and recovery operations shall be minimized.

(b) Operating management shall weigh actual and potential risks against the benefits to be gained.

(c) No individual shall be required to perform a rescue action that might involve substantial personal risk.

(d) Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at § 835.202(a) shall be trained in accordance with § 835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.